

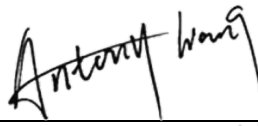
# FCC RF EXPOSURE REPORT

## FCC ID: G95EGA228

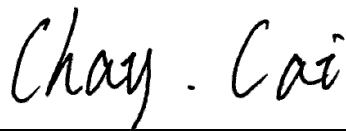
**Project No.** : 2401C198D  
**Equipment** : Dual Band WiFi 7 Fiber Gateway  
**Brand Name** : Vantiva  
**Test Model** : FGA228BPLT  
**Series Model** : EGA228BVBV5, EGA228BSAS  
**Applicant** : Vantiva USA LLC  
**Address** : 4855 Peachtree Industrial Blvd, Suite 200 Norcross,GA 30092 U.S.A  
**Manufacturer** : Vantiva USA LLC  
**Address** : 4855 Peachtree Industrial Blvd, Suite 200 Norcross,GA 30092 U.S.A  
**Factory** : FUYU PRECISION COMPONENT CO.,LTD.  
**Address** : Lot M1, Lot F and Lot T1, Quang Chau Industrial Zone, Van Trung Ward, Viet Yen Town, Bac Giang Province, Viet Nam  
**Date of Receipt** : Oct. 21, 2024  
**Date of Test** : Oct. 23, 2024 ~ Mar. 11, 2025  
**Issued Date** : Apr. 09, 2025  
**Report Version** : R00  
**Test Sample** : Engineering Sample No.: DG20241021284  
**Standard(s)** : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091  
FCC Title 47 Part 2.1091 & KDB 447498 D01 v06

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

**Prepared by** :

  
Antony Liang

**Approved by** :

  
Chay Cai

Room 108-116, 309-310, Building 2, No.1, Yile Road, Songshan Lake Zone, Dongguan City, Guangdong, People's Republic of China.

Tel: +86-769-8318-3000 Web: [www.newbtl.com](http://www.newbtl.com) Service mail: [btl\\_qa@newbtl.com](mailto:btl_qa@newbtl.com)

**REPORT ISSUED HISTORY**

| Report No.           | Version | Description      | Issued Date   | Note  |
|----------------------|---------|------------------|---------------|-------|
| BTL-FCCP-4-2401C198D | R00     | Original Report. | Apr. 09, 2025 | Valid |

## 1. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$$

where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

## 2. ANTENNA SPECIFICATION

For 2.4GHz:

| Ant. | Brand                                                                             | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|-----------------------------------------------------------------------------------|------------|--------------|-----------|------------|
| 1    |  | N/A        | PCB          | N/A       | 3.4        |
| 2    |  | N/A        | PCB          | N/A       | 3.0        |
| 3    |  | N/A        | PCB          | N/A       | 4.1        |
| 4    |  | N/A        | PCB          | N/A       | 4.1        |

Note:

1) For CDD: The directional gain is 1.01.

$$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

$N_{SS}$  = the number of independent spatial streams of data;

$N_{ANT}$  = the total number of antennas

$g_{j,k} = 10^{G_k/20}$  if the  $k$ th antenna is being fed by spatial stream  $j$ , or zero if it is not;

$G_k$  is the gain in dBi of the  $k$ th antenna.

2) The beamforming directional gain is 6.41.

3) The antenna gain and beamforming directional gain are provided by the manufacturer.

### For 5GHz:

| Ant. | Brand                                                                             | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|-----------------------------------------------------------------------------------|------------|--------------|-----------|------------|
| 1    |  | NA         | PCB          | N/A       | 5.0        |
| 2    |  | NA         | PCB          | N/A       | 4.6        |
| 3    |  | NA         | PCB          | N/A       | 4.1        |
| 4    |  | NA         | PCB          | N/A       | 4.7        |

Note:

- 1) For CDD: The directional gain is 2.68.

$$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

$N_{SS}$  = the number of independent spatial streams of data;

$N_{ANT}$  = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$  if the  $k$ th antenna is being fed by spatial stream  $j$ , or zero if it is not;

$G_k$  is the gain in dBi of the  $k$ th antenna.

- 2) For TX BF: The beamforming directional gain is 7.44.
- 3) The antenna gain, directional gain and beamforming directional gain are provided by the manufacturer.

### 3. TABLE FOR ANTENNA CONFIGURATION

#### For 2.4GHz:

For Non Beamforming:

| Operating Mode       | TX Mode | 4TX                                  |
|----------------------|---------|--------------------------------------|
| IEEE 802.11b         |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11g         |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11n(HT20)   |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11n(HT40)   |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE20)  |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE40)  |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT20) |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT40) |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |

For Beamforming:

| Operating Mode       | TX Mode | 4TX                                  |
|----------------------|---------|--------------------------------------|
| IEEE 802.11n(HT20)   |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11n(HT40)   |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE20)  |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE40)  |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT20) |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT40) |         | V(Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |

### For 5GHz:

For Non Beamforming:

| Operating Mode        | TX Mode | 4TX                                   |
|-----------------------|---------|---------------------------------------|
| IEEE 802.11a          |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11n(HT20)    |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11n(HT40)    |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac(VHT20)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac(VHT40)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac(VHT80)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac(VHT160) |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE20)   |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE40)   |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE80)   |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE160)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT20)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT40)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT80)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT160) |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |

For Beamforming:

| Operating Mode        | TX Mode | 4TX                                   |
|-----------------------|---------|---------------------------------------|
| IEEE 802.11n(HT20)    |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11n(HT40)    |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac(VHT20)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac(VHT40)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac(VHT80)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac(VHT160) |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE20)   |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE40)   |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE80)   |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ax(HE160)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT20)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT40)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT80)  |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11be(EHT160) |         | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |

#### 4. CALCULATED RESULT

For 2.4GHz\_Non Beamforming:

| Directional Gain (dBi) | Directional Gain (numeric) | Max. Peak Output Power (dBm) | Max. Peak Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|------------------------------|-----------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 1.01                   | 1.2618                     | 27.54                        | 567.5446                    | 0.06335                                 | 1                                                | Complies    |

For 2.4GHz\_Beamforming:

| Beamforming Directional Gain (dBi) | Beamforming Directional Gain (numeric) | Max. Peak Output Power (dBm) | Max. Peak Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------------------|----------------------------------------|------------------------------|-----------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 6.41                               | 4.3752                                 | 26.58                        | 454.9881                    | 0.17610                                 | 1                                                | Complies    |

For 5GHz\_Non Beamforming:

| Directional Gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 2.68                   | 1.8535                     | 29.99                   | 997.7001               | 0.16359                                 | 1                                                | Complies    |

For 5GHz\_Beamforming:

| Beamforming Directional Gain (dBi) | Beamforming Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------------------|----------------------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 7.44                               | 5.5463                                 | 28.54                   | 714.4963               | 0.35056                                 | 1                                                | Complies    |

**For the max simultaneous transmission MPE:**

| Ratio   |         | Total   | Limit of Ratio | Test Result |
|---------|---------|---------|----------------|-------------|
| 2.4GHz  | 5GHz    |         |                |             |
| 0.17610 | 0.35056 | 0.52666 | 1              | Complies    |

Note:

- (1) The calculated distance is 30 cm.
- (2) Ratio=Power Density (S) (mW/cm<sup>2</sup>)/Limit of Power Density (S) (mW/cm<sup>2</sup>)

**End of Test Report**